

No.	Star.	Epoch.	No. of Plates.	Velocity relative to Sun. (English Miles)		
				Vogel.	Scheiner.	Mean.
43	$\beta$ Herculis	1889.46	2	-21.3	-22.6	-22.0
44	$\alpha$ Ophiuchi	1889.09	2	+12.9	+10.9	+11.9
45	$\alpha$ Lyrae	1889.64	8	-8.7	-10.2	-9.5
46	$\alpha$ Aquilæ	1888.81	3	-24.7	-21.1	-22.9
47	$\gamma$ Cygni	1888.93	2	-3.6	-4.3	-4.0
48	$\alpha$ Cygni	1888.99	4	-3.7	-6.2	-5.0
49	$\epsilon$ Pegasi	1888.81	2	+4.6	+5.4	+5.0
50	$\beta$ Pegasi	1889.90	1	+4.1 :		+4.1 :
51	$\alpha$ Pegasi	1888.81	2	+1.1	+0.4	+0.8

Greatest observed velocity ... +30.2 miles ( $\alpha$  Tauri); -24.0 miles ( $\gamma$  Leonis)

Average velocity ... .. 10.4 miles.

No. of stars with positive velocity greater than 10.4 miles ... .. 7

No. of stars with negative velocity greater than 10.4 miles ... .. 11

Average probable error of the measurements for a single plate

and one observer ... ..  $\pm 1.6$  mile

: denotes less certain, and :: uncertain.

*Potsdam, Royal Observatory :*  
1892 June.

---

*Photographs of the Region of the Globular Cluster 15 M Pegasi.*  
By Isaac Roberts, F.R.S.

Three photographs of the region of 15 M *Pegasi*, R.A.  $21^h 25^m$ , declination  $11^\circ 41'$  N., have been taken with the 20-inch reflector, the first on 1890 November 4, with an exposure of two hours, the second on 1891 October 4, with an exposure of thirty minutes, and the third on 1891 November 27, with an exposure of sixty minutes.

The enlarged photographs now presented have been made from the first of the negatives with the exposure of two hours, and the scales of the enlargements are one millimetre to four seconds of arc in one, and one millimetre to twenty-four seconds in the other.

Sir John Herschel in his observations of nebulae and clusters of stars, No. 2120, writes of M 15 as "a magnificent globular cluster; comes up to a perfect blaze in the centre, like a protuberance or nipple, not the condensation of a homogeneous globe; it has straggling streams of stars, as it were, drawing to

a centre, is irregularly round, very faint stars 15 magnitude all distinct, but running together into a blaze in the middle, 4' or 5' diameter."

Lord Rosse records four observations of the cluster between the years 1852 and 1876, and he states that the stars are bright and faint, and sharply distinct from each other; nucleus a little excentric from the middle. These descriptions convey but little information that is of scientific value, and there are no drawings for comparison with the photographs.

A well-executed print from an enlargement of a photograph of this cluster is given in the volume of the *Specola Vaticana* for 1891, and I have compared it with these photographs, and give the following results:—The stars are easily identified on the respective photographs, but the extent of the nebulosity differs largely. On the Vatican print it can be measured to about sixty-five seconds of arc in diameter round the nucleus, but on my print it measures about 200 seconds of arc. The Vatican print does not cover the whole of the cluster, and in that respect these prints convey a fuller idea of the magnificent proportions of the object. Several rings of stars are visible round the margin of the cluster, and there are also branches, extending in various directions.

Now that we have accurate records of the position and magnitude of every star in the cluster, it is obvious that a few years hence it will be possible to unravel the mysteries that present themselves to us in this and in several other similar star clusters.

---

*Photograph of the Nebula  $\mathfrak{H}$  V 15, near 52 Cygni.*

By Isaac Roberts, F.R.S.

The enlarged photograph now presented was made from a negative, taken with the 20-inch reflector, on 1891 September 28, and exposure of the plate during four hours of clear sky, and represents the region round the double star, 52 *Cygni*, R.A. 20<sup>h</sup> 41<sup>m</sup>, declination 30° 20' N., on the following side of which is the remarkable nebula  $\mathfrak{H}$  V 15.

This nebula is thus described by Sir John Herschel in his observations of nebulae and clusters of stars, No. 2088. The nebula is very long and winding, and runs northward from  $\kappa$  (52), full two fields breadth (30'). The nebula extends southwards far beyond  $\kappa$  *Cygni*, but is extremely faint; the northern part is pretty bright, and extends to two stars. Northwards from  $\kappa$  *Cygni*, 27', extends a curved tail of nebula of a serpentine form, fading very gradually into two tails forming a fork.\* A drawing of the nebula is given in the *Phil. Trans.* R.S., in 1833

\* Abridged description.